REMARKS

Amendment to the Specification

The Examiner objected to the Preliminary Amendment filed on January 20, 2006 because it does not show the changes made to the specification via the amendment (to include "strike-through" to show deletions and underlinings to show additions).

The specification has been amended to show the changes made to the specification in the Preliminary Amendment filed on January 20, 2006. Entry is requested.

Claim Amendments

Claims 1 and 20 have been amended to define that the transition metal is selected from a specific group of transition metals. Claims 1 and 20 have been further amended to more clearly define Applicant's claimed invention. Support for these amendments can be found throughout the specification, for example, at page 9, lines 12-13; and page 9, line 31 through page 10, line 2. Claims 2 and 3 have been amended to more clearly define Applicant's claimed invention and to properly depend from Claim 1, as amended. Claim 7 has been amended to depend from Claim 1 and to delete "zirconium" from the transition metal list. Claim 21 has been amended to more clearly define Applicant's claimed invention and to properly depend from Claim 20, as amended.

New Claims 22-25 have been added. Support for new Claim 22 can be found throughout the specification, for example, at page 9, line 13. Support for new Claim 23 can be found throughout the specification, for example, at page 10, line 3. Support for new Claims 24 and 25 can be found throughout the specification, for example, at page 9, lines 12-16; page 10, line 3; and original Claim 15.

Rejection of Claims 1-21 under 35 U.S.C. §102

Claims 1-21 were rejected under 35 U.S.C. §102(b) as being anticipated by WO 03/037485 A1 to Watanabe *et al.* The Examiner specifically noted that Example 1 is limited to the use of cerium oxide.

WO 03/037485 (hereinafter "Watanabe *et al.*") teaches methods and composition for purifying a contaminated hydride gas. The purifier material of Watanabe *et al.* comprises a thin

layer of reduced forms of oxide of a metal deposited or coated onto the surface of a non-reactive substance.

Applicant's claimed invention, as set forth in Claims 1-5, 7-19 and 22-25, is directed to a method for purifying a hydride gas comprising contacting the hydride gas stream with a material comprising at least one metal oxide from the lanthanide series and at least one specific transition metal, or oxide thereof, to reduce the level of contaminants of the gas stream to not more than about 100 parts per billion (ppb), the material being substantially unaffected by the gas. Applicant's claimed invention is also directed to a composition for the purification of hydride gases, comprising: a) 3-20% by weight of at least one metal oxide from the lanthanide series; and b) at least one specific transition metal, or oxide thereof, wherein the composition is essentially free of at least one of copper, iron and nickel.

There is no explicit teaching in Watanabe *et al.* of a material comprising at least one metal oxide of the lanthanide series and at least one transition metal or oxide thereof, wherein the transition metal is selected from the specific group defined in Applicant's claimed invention. The material of Watanabe *et al.* is consistently described as containing only one metal oxide. For example, the invention is described as "[i]n general, the final purifier material comprises about 1 to 20% of the reduced forms of the metal oxide and about 80 to 99% of the substrate." In addition, none of the examples show the use of a combination of metal oxides in materials of the invention.

Furthermore, Watanabe *et al.* provides examples of suitable metals for use in the disclosed method, which includes vanadium (V), molybdenum (Mo), antimony (Sb), bismuth (Bi), tin (Sn), cerium (Ce), chromium (Cr), cobalt (Co), copper (Cu), tungsten (W), and mixtures thereof. However, there are no teachings in Watanabe *et al.* directed to how the oxides of the listed metals function to remove contaminants from a hydride gas or why these particular metals with such disparate physical and chemical properties were selected for use in this invention. Moreover, data for utilizing the oxides of the listed metals for the disclosed purification purpose are provided only for five metals (Mo, Ce, Ni, Co and Cu) and two of the metals exemplified, Ce and Ni, failed to purify hydride gas to the disclosed parts-per-billion level. Particularly, as shown in Example 3, a purifier material comprising Ce_xO_y/Al_2O_3 (cerium oxide deposited onto alumina) can remove oxygen in NH_3 only to 19,000 ppb level, much higher than the claimed

parts-per billion level. Thus, Watanabe *et al.* does not provide enabling teachings for the use of a reduced form of a metal oxide, particularly cerium oxide, for purifying a contaminated hydride gas to reduce the level of the contaminants to not more than 100 ppb, as claimed in the present invention. Therefore, Watanabe *et al.* is not a proper anticipatory prior art reference and Applicant's claimed invention is novel in view of Watanabe *et al.*

Rejection of Claims 20 and 21 under 35 U.S.C. §102(b)

Claims 20 and 21 were rejected under 35 U.S.C. §102(b) as being anticipated by US 2001/0012502 to Okumura.

Okumura *et al.* teaches an exhaust-gas purifying catalyst containing iridium, a rare-earth metal and sulfur, wherein the rare-earth metal is preferably contained as a complex oxide containing at least one element selected from the group consisting of cerium, lanthanum, yttrium, neodymium and praseodymium and also at least one element selected from the group consisting of titanium, manganese, iron, cobalt, nickel, copper and tin. Okumura *et al.* further teaches that in the complex oxide, the weight ratio between at least one element selected from the group consisting of cerium, lanthanum, yttrium, neodymium and praseodymium and at least one element selected from the group consisting of titanium, manganese, iron, cobalt, nickel, copper and tin is preferably set in the range of 1:20 to 100:1.

Applicant's claimed invention, as set forth in Claims 20 and 21, is directed to a composition for the purification of hydride gases comprising: a) 3-20% by weight of at least one metal oxide from the lanthanide series; and b) at least one transition metal, or oxide thereof, wherein the composition is essentially free of at least one of copper, iron and nickel. The composition of the present invention has 3-20% by weight of the composition being the metal oxide from the lanthanide series.

The composition taught in Okumura *et al.* contains: a) iridium; b) a rare-earth metal preferably as a complex oxide; and c) sulfur. Okumura *et al.* only teaches that in the complex oxide of component b), the weight ratio between the lanthanide metal oxide and non-lanthanide metal oxide selected from the group consisting of titanium, manganese, iron, cobalt, nickel, copper and tin is in the range of 1:20 and 100:1. There is no teaching in Okumura *et al.* that the lanthanide metal oxide is 3-20% by weight of the whole composition (i.e. the sum of components

a), b) and c)). In addition, Okumura *et al.* does not teach the composition is essentially free of at least one of copper, iron and nickel.

Therefore, Claims 20 and 21 are novel in view of Okumura *et al.*

Oath and Declaration

A Supplemental Declaration by inventor Daniel Lev is submitted herewith, thereby obviating the Examiner's objection of the original Declaration.

Information Disclosure Statement

A Supplemental Information Disclosure Statement (SIDS) is being filed concurrently herewith. Entry of the SIDS is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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